Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

Reserve
A281.9
F76Fm

3

The Deciduous Fruit Industry of ARGENTINA

31
LIBRARY
CURRENT SERIAL RECORD
SEP 11 1958
★
U. S. DEPARTMENT OF AGRICULTURE

56

U.S. DEPARTMENT OF AGRICULTURE
Foreign Agricultural Service
FAS-M-41

ACKNOWLEDGMENTS

The author wishes to acknowledge the great help and very fine cooperation he received from the Argentine industry and government officials while making this study in their country.

Highly appreciated were the data provided and the contacts arranged for throughout the producing areas by Ing Agrs. Alfredo E. Rasp and Carlos A. Wirth of the Ministry of Agriculture and Sr. Jorge R. Mir of Argentina Fruit Distributors.

Members of the industry who spent a great deal of time contributing to the success of the study were Messrs. Charles Nolan, Jacinto De La Cal, Benigno Segovia, and Edward T. Lett of the Rio Negro Valley; Messrs. V. Johnson, Aurelio Roldan, W. G. McSparron, and M. Mackenzie of San Raphael, Mendoza, and Mr. Jose B. Segarra of San Juan.

The cooperation of Ministry of Agriculture officials Dimos Piroli and Pedro Arostegui of Cipoletti, Neuquen, and San Raphael, Mendoza, respectively, was also deeply appreciated.

FOREWORD

The deciduous fruit industry of Argentina has become one of the most important in the Southern Hemisphere, exporting to all major markets of the world including the United States. The volume of these exports has grown substantially in recent years and, consequently, much interest in the Argentine industry has developed.

This study is designed to bring the fruit trade of the United States up to date on what has been going on in Argentina since 1942, when "The Fruit Industry of Argentina," by Fred Motz, was issued by the Foreign Agricultural Service. Also, it is designed to aid in estimating the potential of Argentina's industry.

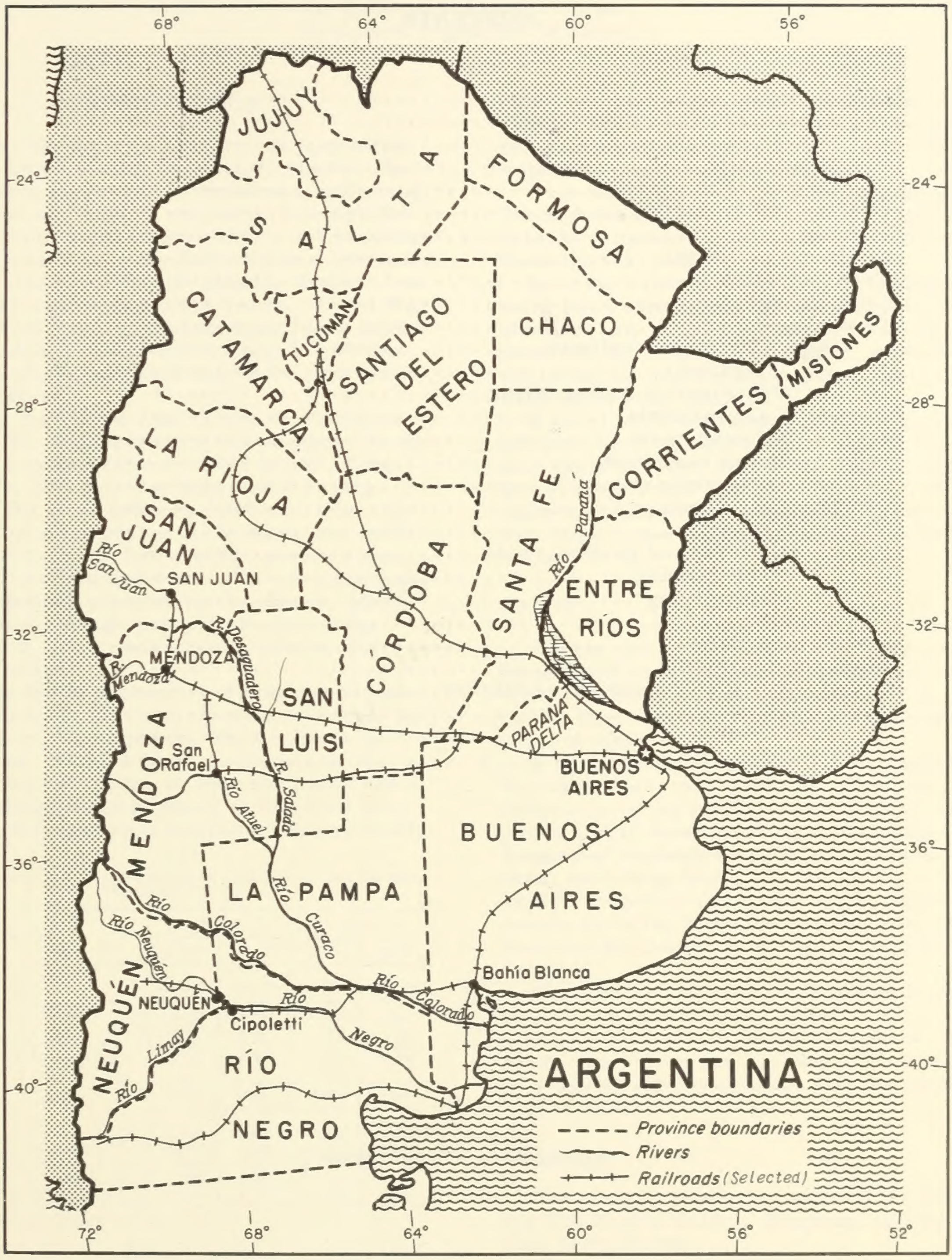
DM Rubel

D. M. Rubel, Director
Fruit and Vegetable Division

NOTE: All conversions in this report from Argentine pesos to dollars are made at the free rate in effect during the 1957-58 harvest season--pesos 38.00 equal $1.00.

206221

3111E



CONTENTS

Page

Introduction 1
  Apples 1
  Pears 1
  Stone fruits 2
  Grapes 2
Grading and inspection 3
Packing 3
Currency exchange 4
Transportation 4
Cold storage 5
Producing areas 5
  Upper Rio Negro Valley 5
    Irrigation 7
    Fertilization and spraying 7
    Cultural costs 8
    Packing costs 8
    Boxes and shook 8
    Delivered costs 8
  Mendoza Province 8
    Irrigation 9
    Cultural and packing costs 10
    Fruit canning 10
    Fruit drying 12
  San Juan 12
  Parana Delta 13
Domestic marketing 15
  Operation of Buenos Aires market 15
Export outlook 16
  Fresh fruit 16
  Processed fruit 16

August 1958
Agriculture - Washington

THE DECIDUOUS FRUIT INDUSTRY OF ARGENTINA

By Robert S. FitzSimmonds,
Fruit and Vegetable Division

INTRODUCTION

The deciduous fruit industry in Argentina has developed during the past 25 years. During its first 10 years, it developed sufficient production and export volume to convert the country from a net importer to a net exporter of deciduous fruit. The industry has continued to grow steadily although slowly, despite two major deterrents in recent years. World War II closed off export markets except for nearby South American countries and the Perón regime was not sympathetic to the problems of agriculture.

During the Perón rule it was virtually impossible for fruit growers and shippers to obtain any consideration of their needs. Consequently, the industry stood still during much of the time between 1939 and 1956, insofar as modernization of methods and facilities is concerned. Some of the major problems still besetting the industry are inadequate transportation, machinery shortages, insufficient cold storage capacity in producing zones, and, in certain areas, substantial labor troubles.

Despite these problems, Argentina is now one of the major fruit producing countries in the Southern Hemisphere. On the basis of production, it holds first place; but on the basis of export trade, it does not hold such a commanding position; much of the fruit produced in the country is consumed domestically.

TABLE 1.--Apples and pears: Production and exports by country, Southern Hemisphere, 1955-57

Country	Apples		Pears	
	[illegible]	[illegible]	[illegible]	[illegible]
Production:	[illegible]	[illegible]	[illegible]	[illegible]
Argentina	[illegible]	[illegible]	[illegible]	[illegible]
Australia	[illegible]	[illegible]	[illegible]	[illegible]
Chile	[illegible]	[illegible]	[illegible]	[illegible]
New Zealand	[illegible]	[illegible]	[illegible]	[illegible]
Union of South Africa	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
Exports:				
Argentina	[illegible]	[illegible]	[illegible]	[illegible]
Australia	[illegible]	[illegible]	[illegible]	[illegible]
Chile	[illegible]	[illegible]	[illegible]	[illegible]
New Zealand	[illegible]	[illegible]	[illegible]	[illegible]
Union of South Africa	[illegible]	[illegible]	[illegible]	[illegible]

[1] Year beginning January 1.

The leading deciduous fruits produced in Argentina are apples, pears, peaches, and grapes. Apples and pears are grown for export as fresh fruit; peaches are chiefly for canning. Grapes are shipped both fresh for table use and as raisins. In addition, apricots, quinces, and plums and prunes are produced but generally do not figure in the export trade in large quantities.

Argentine deciduous fruits find markets throughout the world, with major outlets in Brazil, Venezuela, northern Europe and Scandinavia, and the United States.

In recent years, Argentine fruit exporters have been concentrating on extending the export season. With the ever increasing production, particularly of apples, and some increase in cold storage space, their efforts have been very successful.

If forecasts on production are correct and present hopes for additional storage space are realized, this trend will likely continue for apples. Also, after a few years, when the expected increase in pear production occurs, the same trend should be noticeable in pear exports.

Apples

Apples are grown in the Rio Negro Valley, Mendoza Province and the Delta and Buenos Aires section, but are packed for export only in the Rio Negro and Mendoza, the most important apple areas.

A breakdown of acreage or tree numbers by variety was not available. However, Red Delicious is the leading variety in most areas, particularly those packing for export. Other important varieties are Rome Beauty, Jonathan, and King David. In the Delta, a green apple, normally russeted on one cheek and known as Dirty Face, is grown in large volume for the domestic market and is in good demand.

The San Rafael area of Mendoza Province packs a very attractive apple which is completely acceptable in export markets. However, fruit from the Rio Negro is more true to varietal characteristics and frequently of higher color.

Pears

The leading producing section for pears is the Rio Negro Valley. Mendoza and the Delta also grow some.

The leading variety in volume is Williams (Bartlett) and, being an early variety, is packed in quantity for export. However, because of its quality, longer storage life, and ability to withstand the rigors of long transportation to market, Packham's Triumph is becoming the leading export variety. Triumph is a later pear than Bartlett and, in export markets, will normally bring premium prices over Bartlett.

Other varieties grown and packed include Anjou, Winter Nelis, and a few Comice.

Stone Fruits

The peach is the most important stone fruit grown in Argentina. Plums and prunes are second. Smaller quantities of apricots are also grown.

TABLE 2.--Deciduous fruit: Argentine production, by kinds and areas, 1955-57[1]

Kind and year	Unit	Rio Negro and Neuquen	Mendoza and San Juan	Catamarca and La Rioja	Buenos Aires, including Delta and Santa Fe	Others	Total Argentina
Apples:							
1955	1,000 Boxes	6,937	2,759	---	1,753	210	11,659
1956	....do......	9,688	3,538	31	1,835	143	15,235
1957	....do......	7,946	1,924	43	2,053	68	12,034
Pears:							
1955	....do......	2,271	1,682	10	298	78	4,339
1956	....do......	2,303	1,744	9	313	33	4,402
1957	....do......	2,646	1,543	18	397	26	4,630
Peaches:							
1955	Tons	2,701	76,279	2,921	80,358	3,858	166,117
1956	....do......	1,874	10,758	1,764	68,607	3,527	86,530
1957	....do......	882	65,697	5,400	104,167	3,527	179,673
Plums:							
1955	....do......	1,084	32,518	772	12,070	734	47,178
1956	....do......	1,064	29,652	353	14,749	810	46,628
1957	....do......	1,433	24,692	550	18,960	660	46,295
Grapes:[2]		Mendoza	San Juan	Other			
1954	....do......	1,950	634	224	---	---	2,808
1955	....do......	1,450	386	184	---	---	2,019
1956	....do......	637	534	218	---	---	1,389

[1] Year beginning January 1.
[2] Includes grapes for wine and table.

Argentine Ministry of Agriculture.

TABLE 3.--Apples, pears, and grapes: Exports from Argentina, by country of destination and kinds, 1955-57

Country	Apples			Pears			Grapes		
	1955	1956	1957[1]	1955	1956	1957[1]	1955	1956	1957[1]
	1,000 boxes	*1,000 boxes*	*1,000 boxes*	*1,000 boxes*	*1,000 boxes*	*1,000 boxes*	*Tons*	*Tons*	*Tons*
Africa	58	93	57	4	11	11	---	---	---
Belgium	---	22	93	5	11	45	---	---	---
Brazil	1,958	1,200	1,675	540	378	391	7,900	3,200	2,130
Cuba	---	---	21	---	---	---	---	---	---
Finland	489	349	306	---	---	---	---	---	---
France	150	186	96	120	111	21	---	---	---
Germany, West	---	2	59	---	---	112	---	700	1,200
Italy	---	4	---	---	---	---	34	45	---
Netherlands	---	91	611	---	26	179	---	30	140
Netherland Antilles	6	17	25	---	2	3	80	20	50
Norway	---	---	184	---	---	---	---	---	820
Panama	---	---	11	---	---	---	---	---	---
Paraguay	54	8	---	4	1	1	25	5	---
Peru	---	---	49	---	---	1	---	---	---
Sweden	110	297	650	12	144	255	270	470	570
Switzerland	---	27	31	---	4	8	6	---	---
United Kingdom	133	384	440	---	171	196	---	680	350
United States	2	10	307	120	361	243	100	840	440
Venezuela	35	133	265	18	72	102	410	1,300	1,750
Total	2,995	2,823	4,880	823	1,293	1,568	8,825	7,290	7,450

[1] Through Oct. 31, 1957. Season virtually completed by this date.

Gabriel y Cia., Estadistica de la Exportacion de Frutas Frescas.

Stone fruits are grown in the San Rafael area and the Delta and Buenos Aires Province. The San Rafael production is largely for processing; the Delta produce is moved to Buenos Aires markets as fresh fruit. San Rafael produces canned peaches and dried prunes.

Small quantities of cherries are produced and consumed locally. Apricots also are moved almost entirely into domestic markets.

Grapes

The production of grapes is centered in the Provinces of Mendoza and San Juan. Mendoza produces wine almost exclusively and San Juan packs fresh table grapes and raisins in addition to wine. Grapes are also grown in the Rio Negro but are a relatively minor crop and are largely used for wine.

GRADING AND INSPECTION

Growers and packers of export fruit are very quality conscious, and grading generally is thorough. The best fruit is packed for export and is restricted to fruit of good color, typical shape for the variety, and a minimum of blemishes or other faults.

Grades used for apples are Choice, Standard, Special, Good, Common, and Economic, with the first two exportable. Pears are graded Extra Fancy, Choice, and Standard for export; the same grades as for apples are used in domestic markets. The Standard grades are new ones, first allowed during the 1957-58 season. In areas such as the Delta and Buenos Aires Province, where most production is designed for domestic sale, sorting and grading is at a minimum and most offerings are orchard run.

TABLE 4.--Apples and pears: Exports, excluding ship[illegible], [illegible] export season, by months, 1952-57

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Apples:						
January	---	---	---	---	---	---
February	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
March	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
April	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
May	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
June	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
July	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
August	---	---	[illegible]	[illegible]	[illegible]	[illegible]
September	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
October	---	---	---	---	---	[illegible]
Pears:						
January	[illegible]	---	26.2	84.4	204.3	307.6
February	[illegible]	[illegible]	106.9	36.4	167.3	317.3
March	[illegible]	[illegible]	32.1	50.5	181.7	285.0
April	[illegible]	[illegible]	64.5	47.5	163.0	125.3
May	[illegible]	[illegible]	9.4	49.0	157.8	90.6
June	[illegible]	[illegible]	3.6	10.4	36.9	48.1
July	---	---	1.3	1.2	.2	2.8
August	---	---	---	.3	2.9	.1
September	---	---	---	---	---	---

[illegible] Estadistica de la Exportacion de Frutas Frescas.

Fruit sold on domestic markets generally is sound but has a high degree of surface blemishes and is fruit which cannot meet export grades. Possibly the best fruit obtainable domestically is the occasional lot packed for export but turned back by the inspectors for condition factors slightly in excess of tolerance.

Export requirements are set by law and fruit failing to meet specified grades cannot be exported. In general terms, the top export grades, according to Argentine Government grading standards, must be packed with fruit of uniform size and of one variety only. It must be well-developed fruit, characteristic of the variety, mature, of good color, sound and free of defects. Lower export grades differ from the top grade chiefly in higher tolerances for color and uniformity of fruit. No actual inspection is made of the packed fruit, other than that done by the packer, until it reaches the port. It is then inspected by Argentine Government inspectors to determine its suitability for export and to assure that it is of the grade which the packer has stamped on the box.

PACKING

Early packing plants for apples and pears established in Argentina some 20-25 years ago were equipped with rotary bin type grading and packing lines imported from the United States. These machines are in full use today, with packing sheds ranging from one to six separate lines. Packing plants built more recently, including most of the cooperative packing operations, are equipped with identical machinery of Argentine manufacture. These locally built machines operate satisfactorily but require more maintenance than do the American machines, despite the age of the latter.

Workers hand-sort Sultanina raisins for color, San Juan.

Packers pay growers on the basis of packout by grades. However, the initial payment is based on estimates of the crop and a price agreement when the fruit is still on the trees. Payment is made in three installments, the first at the time of the agreement and the second about the time the fruit is packed or shortly thereafter. The third installment, adjusted for packout, is made after final sale and is further adjusted for variation in the actual amount received by the packer-shipper for the fruit. This procedure is normal among both cooperatives and noncooperatives.

Fruit is generally packed with an extremely high bulge and the lid forced on to help position the fruit in the box. Naturally this practice leads to a high degree of bruising, and many packers in the area are reducing the size of the bulge, particularly with fruit being packed for export. Boxes are lined with corrugated paper and fruit is individually wrapped in paper. Most packs are good and the fruit packed is somewhat on the firm side so as to allow shipment in unrefrigerated rail cars.

The entire packing system was modeled after the system used 20-25 years ago in western United States. In fact, during the early days of the industry, technicians from the United States were brought in to establish and run the packing plants and to teach methodology to the Argentine industry.

Standard containers used for export are approximately the same as those used in the United States:

Container	Net weight	Dimensions	
		Outside	Inside
	Pounds	*Inches*	*Inches*
Apple, box..	48-1/2	11.6x13x19.5	10.6x11.5x18
Pear, box...	44	9.0x13x19.5	8.3x11.5x18
Grape, lug..	28	6.0x14x17.5	

CURRENCY EXCHANGE

In the past, fruit exporters have been held back somewhat by exchange restrictions which limited them to officially determined exchange rates usually lower than free exchange. However, in the 1957-58 season, in answer to requests from the industry, the Argentine Government released fruit from these restrictions. For the first time in several years all fruits can be exported at free exchange rates, except shipments to Brazil. This action will stimulate exports by improving the competitive position of Argentina. For example, fruit sold for a price of $4.00 per box f. a. s. Buenos Aires would have returned 72.00 pesos to the exporter under the official rate of 18-1. With the new free rate (38-1) the same price in dollars brings the exporter 152.00 pesos.

TRANSPORTATION

Transportation facilities for fresh fruit in Argentina are extremely inadequate in almost all respects. However, rates are rather low. The roads of the country are generally bad, and thus fruit movement is by rail except from areas close to Buenos Aires where trucks can be used.

The railroads of Argentina are owned and operated by the government and apparently very little is being done to improve equipment or service. Rail cars used for fruit are ventilated cars--cars with slatted sides, so that air blows through the load while the train is moving. There are very few refrigerated cars in the country and the few available are used almost exclusively for fresh grapes moving from San Juan area to Buenos Aires.

No subsidies are publicized by the railroads but apparently the low rates in effect are largely a result of government absorption of at least a portion of the operating costs.

Argentine railroads have narrow, standard, and wide gage lines so that interchange of equipment is extremely limited.

Buenos Aires is the only port from which fruit is exported, and in fact, is the hub of almost all business operations of the country. Therefore, the railroads fan out from the city like the spokes of a wheel, with very little, if any, cross movement between the main lines. For example, a main line runs from Buenos Aires southwest to the Rio Negro and another from Buenos Aires west to Mendoza but there is no rail connection between Rio Negro and Mendoza without returning to Buenos Aires.

TABLE 5.--Transportation costs: Rail freight rates, producing area to port, by area and kind, 1958

Kind	Unit	Rio Negro to Buenos Aires		Mendoza to Buenos Aires		San Juan to Buenos Aires	
		Pesos	*Dollars*	*Pesos*	*Dollars*	*Pesos*	*Dollars*
Apples...........	48.5 lb. box	6.72	0.18	9.61	0.25	---	---
Pears............	44 lb. box	6.72	.18	9.61	.25	---	---
Grapes...........	28 lb. lug	---	---	---	---	6.00	0.16
Plums............	22 lb. lug	---	---	4.75	.13	---	---
Prunes...........	....do......	---	---	2.50	.07	---	---
Raisins..........	....do......	---	---	---	---	3.80	.10

Fruit growers and shippers in all the major areas of western Argentina are campaigning for the construction of good paved roads from their areas to the city but have met with very little success. Such road improvement would make the use of motor trucks feasible and greatly facilitate the movement of fruit. The areas close to Buenos Aires where truck movement is possible are largely using this method of transportation in preference to the poor rail service.

Fruit exported from Argentina is shipped from the port of Buenos Aires in refrigerated holds. To date, shipping space has been adequate for movement to the United States, but at certain times short-term shortages for movement to Europe have developed. Dock handling space is adequate and delays do not normally occur at this point.

Ships carrying fruit from Buenos Aires to United States ports are equipped with recording thermometers. Fruit has been cooled in cold storage prior to loading and a record of the temperature at loading is taken by Argentine plant quarantine officials. The fruit then, through the use of the recorders, is able to pass the quarantine required by U. S. Regulations in the ship before it arrives at a United States port. For pest control purposes, fruit must be held in the ship at maximum temperatures of 32-36° F. The length of time required for the treatment varies from 10 to 16 days, depending upon the maximum temperature at which the fruit is held. This arrangement has materially reduced delays in marketing of Argentine fruit in the United States.

TABLE 6.--Transportation costs: Ocean freight rates, Buenos Aires to major world market areas, February, 1958

Kind	Unit (net weight)	From Buenos Aires to--			
		New York	New Orleans	United Kingdom	European Continent
		U. S. dollars	*U. S. dollars*	*U. S. dollars*	*U. S. dollars*
Apples...........	48.5 lb. box	2.15	2.15	1.51	1.60
Pears............	44 lb. box	2.15	2.00	1.37	1.37
Grapes...........	28 lb. lug	1.23	1.15	.77	.90
	34 lb. lug (sawdust pack)	---	---	1.09	1.25

COLD STORAGE

Cold storage capacity in Argentina is inadequate and is centered in Buenos Aires; only small capacities are available in producing areas. Total cold storage capacity for fruit in Buenos Aires is about 6.5 million boxes. Total capacity outside of Buenos Aires is about 2.3 million boxes.

Practically all fruit for export moves into cold storage in Buenos Aires while awaiting shipment. Fruit stored in producing areas during harvest season must wait for winter months to be moved to Buenos Aires for export because of the lack of refrigerated transportation. This also applies to the fruit which is stored in the cold rooms in Bahia Blanca, where there is a cold storage plant built for meat but used almost exclusively in recent years for fruit. This warehouse provides space for about 100,000 boxes.

Cold storage capacity in Argentina for fresh fruit is as follows, expressed in standard boxes:

Area	Capacity (boxes)
Buenos Aires.............	6,555,000
Mendoza..................	884,000
Rio Negro................	530,000
Other....................	915,000
Total Argentina	8,884,000

Comparison of the total cold storage capacity of the country--about 9 million boxes--with total apple and pear production of 15-20 million boxes points up the acute shortage of facilities. Roughly 7.5 million boxes capacity of cold storage is used only for export fruit. This is slightly more than total requirements, for total fruit exports average about 5-6 million boxes.

Cold storage charges in Buenos Aires are as follows:

	Pesos per box	Dollars per box
1st 10 days..........	5.30	0.13
Next 50 days (per day)	.09	.002
Next 30 days (per day)	.07	.0018
Next 30 days (per day)	.06	.0015
Next 30 days (per day)	.05	.0013
Each succeeding 30 days (per day)..........	.04	.0010

However, the major deficiency in cold storage facilities is the extremely short capacity available in producing areas coupled with the almost complete lack of refrigerated transportation, which necessitates moving much of the fruit at relatively high temperatures throughout a trip of about 3 days before cooling of any type is accomplished. Shippers in growing areas are now beginning to expand cold storage capacity in their respective areas. However, this is moving very slowly and the rate of increase will be low. In addition, regardless of the extent of improvement in storage facilities, the benefit to the industry can only be small until transportation facilities are similarly improved.

In the Rio Negro area, growers have recently petitioned the Minister of Commerce for support in obtaining loans for the constructing of cold storage plants in producing areas. They cited figures showing that local cold storage capacity is only about 5 percent of total production.

PRODUCING AREAS

Deciduous fruit is grown in several widely scattered areas of the country. These areas in order of importance are:

	Approximate distance and direction from Buenos Aires
Rio Negro and Neuquen	1,000 miles southwest
Mendoza and San Juan	700 miles west
Delta and Buenos Aires Province............	---
La Rioja and Catamarca	700 miles northwest

Deciduous fruit for export is grown in the Rio Negro, Neuquen, Mendoza, and San Juan Provinces, all of which lie in western Argentina at the foot of the Andes Mountains. Other areas produce largely for the domestic market.

Argentine fruit areas showed no tendency toward specialization until recent years and then only in the areas producing export fruit. Most areas still grow all kinds of deciduous fruit and in some, such as the Delta, have citrus as well. However, because of climate, soil adaptation, and other conditions, certain kinds are beginning to become more prominent than others in each area.

Upper Rio Negro Valley

Apples and pears have become the most important crops in this area and it is the principal zone in Argentina producing them for export. It is an irrigated district lying at the foot of the Andes about 1,000 miles southwest of Buenos Aires and includes parts of the valleys of the rivers Limay, Neuquen, and Negro.

The Limay and Neuquen Rivers both rise in the Andes Mountains and flow northeast and southeast, respectively, joining at Cipolletti to form the Rio Negro. At this juncture is a dam diverting water into the gravity-fed irrigation system.

Close spacing of trees like those shown in this apple orchard in Rio Negro Valley is typical of the older plantings of the area. In the new orchards, trees are being planted farther apart--30x30, which is still close according to United States practices.

This part of Argentina is a semiarid plateau cut by narrow valleys through which the rivers flow. The Upper Rio Negro Valley is such a valley varying in width from 1-1/2 to 8 miles. The cultivated area of the valley extends east and west about 60 miles, from Cinco Saltos in the west to Villa Regina. Cipolletti in Rio Negro Province and Neuquen in Neuquen Province are the largest towns in the valley. Cipolletti is the center of the fruit packing industry.

This area is semiarid with a maximum annual rainfall of about 4 inches. Thus it is dependent on irrigation. However, water is plentiful. The Rio Limay is fed by mountain lakes and contains a good head of water throughout the year. It is estimated that present plantations in the valley are using approximately 50 percent of the total available supply of water.

Too much or too frequent irrigation often cause major problems in the valley. In certain districts, heavy salting of the land has occurred to the detriment of tree growth. This condition has reduced yields in some small sections and even caused abandonment of some land.

The Rio Negro Valley is an area of intensive fruit culture. A part of the valley is devoted to tomatoes and other vegetable crops and a small section is in pasture. However, the major farming is fruit culture and fruit growers do not grow other crops commercially. In the early days, pears led apples (1932-46) but this emphasis has now changed. After a few unprofitable years for pears, growers tended to concentrate their efforts on apples. Overall production has continued to expand, with new plantings almost all apples. Today, the valley has a substantial potential for increasing apple production in both the short- and long-term outlooks.

Most apple trees in Argentine look like this one; they are not low and spreading as trees in the United States.

Pears remained at about the same level of production throughout the years because of the lack of interest in expansion or replanting trees. But during the past 2 or 3 years, they have again become a profitable crop and the rate of planting has increased. If this continues, pear production can be expected to trend upward in a few years when these trees come to bearing age. In the meantime, production levels should be relatively stable.

TABLE 7.--Rio Negro Valley: Acreage by kind and Province, 1955 and 1956

Kind	1955			1956		
	Rio Negro	Neuquen	Total Valley	Rio Negro	Neuquen	Total Valley
	Acres	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*
Apples	37,016	2,669	39,685	38,955	4,398	43,353
Pears	9,662	519	10,181	9,711	791	10,502
Peaches	2,088	642	2,730	1,890	544	2,434
Plums	331	94	425	432	82	514
Quinces	1,359	25	1,384	1,408	25	1,433
Cherries	136	27	163	173	25	198
Nectarines	86	255	341	166	262	428

Growers and shippers of the valley now predict that apple and pear production in the Rio Negro will grow from the present total of about 10-15 million boxes to more than 20 million by 1961.

At present in the Rio Negro, 30 percent of the fruit trees are below bearing age and these young trees are about 90-95 percent apples.

Thus, only about 10 percent of the pear trees in the valley are below bearing age. Approximately 70 percent of the valley's total production of apples and pears is for export; the remaining 30 percent moves to domestic markets.

TABLE 8.--Apples and pears: Trends of production in Rio Negro Valley, 3-year averages, 1943-57

Year	Apples	Pears
	Million boxes	*Million boxes*
1943-45..............	2.9	3.0
1946-48..............	2.9	2.4
1949-51..............	5.6	2.9
1952-54..............	8.2	2.1
1955-57..............	8.2	2.5

Trees in most of the older apple and pear orchards are set very close together (generally 20x20 feet), which makes orchard work difficult and restricts the use of machinery. Growers are now aware of the drawbacks inherent in such a system and trees in the younger plantations are planted mostly 30x30 feet.

The apples and pears of the Rio Negro Valley are of generally good quality and appearance and well graded. Known varieties have typical varietal shape characteristics and fruit is normally well colored.

Plantations in the Rio Negro are relatively small; individual holdings average about 30-40 acres. This acreage will be divided generally between apples and pears, with apples taking the majority of the space. On some orchards, other fruits are grown but the preponderance of the commercial holdings growing and shipping for export are concentrating on apples and pears. Several farms in the valley were polled for their holdings and averages determined to develop the approximate holdings of "a typical fruit farm" in the Rio Negro region; results of this work are shown in table 9.

Irrigation. --The Rio Negro irrigation system consists of a large main canal running along the north side of the valley with secondary feeder lines crossing the valley throughout the cultivated area. Each plantation is supplied by small canals, or ditches, fed by these secondaries.

Most plantations are laid out in squares, with each plot equal to 1 hectare (2-1/2 acres). Irrigation ditches run along the boundaries. Water is generally applied to the trees by flooding, but some plantations have furrows to carry the water between the rows of trees.

Every irrigation ditch, or canal, has a row of closely planted Lombardy poplar trees along each bank. Thus, every hectare is surrounded by a tall windbreak. These poplar trees serve two very important functions. First, the windbreak is extremely important because of the prevalence of high winds in the area. Secondly, and possibly as important, the wood from these trees is used to make boxes for apples and pears and provide a supplementary source of income to the fruit producer.

TABLE 9.--Rio Negro Valley: Land utilization on typical fruit farm (chacra)

[illegible]	Hectares	Acres
[illegible]:		
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	[illegible]
[illegible]:		
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	11
[illegible]........................	[illegible]	[illegible]
[illegible]........................	[illegible]	[illegible]
	Average number of trees per acre	Average yield in boxes per acre
[illegible]........................	[illegible]	590
[illegible]........................	112	350

Fertilization and spraying. --Good fertilization and spraying methods are used throughout the valley.

Fertilization consists of a combination of chemicals and green and animal manures. Chemical fertilizers are applied at the average rate of about 550-600 pounds per acre. Green manure is generally a barley crop turned under each year.

Irrigation canal with windbreak of Lombardy poplars.

Animal manure is available and growers apply about 3.5 tons per acre. When available, more is used, with a corresponding reduction in the amount of chemicals applied.

Spraying is generally done with old, small machines which involve quite a bit of labor. However, the job is done effectively. Oil sprays, DDT, and malathion are used and the rates and times of application are modeled after the spray schedules used in the United States. Many growers expressed interest in the new speed sprayers but import restrictions and the close spacing of trees in older orchards precludes their use at present.

Cultural costs.--The Rio Negro Valley was the only area in which it was possible to obtain detailed cultural costs. Because of the relatively small plantations and the concentration on apples and pears in the area individual cost items were obtained. Items shown in table 10 are averages and represent a relatively narrow range of costs. Actual costs of materials and labor, and average rates of application per acre were used. To determine per box costs, average yields from table 9 were applied to total per acre costs.

TABLE 10.--Apples and pears: Calculated cultural costs, Rio Negro Valley, 1958 season

Item	Red Delicious apples		Bartlett pears	
Cost per acre:	*Pesos*	*Dollars*	*Pesos*	*Dollars*
Fertilizer and animal manure...	858.81	22.59	833.44	21.93
Spray materials................	1,293.79	34.04	1,025.27	26.98
Miscellaneous materials........	212.47	5.59	60.71	1.60
Taxes, licenses, etc...........	364.23	9.58	364.23	9.58
Wages and salaries.............	3,350.06	88.16	2,431.80	63.99
Contributions required.........	319.13	8.40	225.44	5.93
Amortization...................	344.40	9.06	344.40	9.06
Loading and transporting field boxes to packinghouse......	971.28	25.56	545.86	14.36
Cost, total crop delivered to packinghouse............	7,714.17	202.98	5,831.15	153.45
Cost per box.....................	13.10	.34	16.66	.44

Packing costs.--Packing costs are fairly well standardized throughout the valley, as materials do not vary much in price and labor rates are set by agreement and thus are the same basic rates to all packers. Because of this situation, it was possible to outline cost figures from packers' records.

Packing sheds are spotted throughout the valley, with very few of them on rail sidings. Argentine Fruit Distributors Company operates six plants, including the largest in the valley, which is at Cipolletti, and has six grading and packing lines. Most other plants in the valley are cooperatives and generally have one to three packing lines. AFD was originally organized as a company by the railroad and consequently all of its plants have rail sidings. Only a very few of the others have them, and packed fruit must be trucked to railheads for loading on cars.

After packing, fruit is loaded on ventilated rail cars--no refrigerated cars are available--and shipped to Buenos Aires, where it goes into cold storage. A small amount of fruit is stored in Rio Negro but space is very limited there, totaling about 500,000 boxes. Fruit stored locally must, of necessity, remain in storage until cold winter weather has set in before being moved to port. Since no refrigerated cars are available, stored fruit cannot be moved during warm weather.

Boxes and shook.--There are 44 sawmills in the Rio Negro Valley primarily engaged in making shook for apple and pear boxes from poplar logs, which are selectively cut from windbreaks. Historically, these sawmills have provided about 60 percent of the boxes used in the valley; the rest comes chiefly from the Delta region.

In view of the increase in fruit production which is taking place in the valley--and the increase in box requirements--many growers are now planting windbreaks three or four rows thick instead of two. Also, several large poplar plantations have been established on land which is not used for fruit. At present, and until these plantations come into production in about 5 years, the shook manufactured in the valley comes entirely from windbreaks. These trees reach marketable size at about 12 years of age and at that time are sold to a sawmill operator for 300-400 pesos ($7.90-10.50) per metric ton on the stump.

Box production in the valley now totals about 9 million boxes per year. Yield from the poplar logs is about 70 boxes per ton of wood. In about 5 years it is expected that approximately 250,000 tons of wood will be produced per year, or, in terms of boxes, more than 17 million per year. Some operators, however, estimate that with the expected expansion in fruit production during this period, valley-produced boxes will still provide only about 85 percent of requirements.

The shook produced from this wood is of good appearance and is smooth planed, so that the finished boxes have a clean attractive appearance.

Delivered costs.--From a summary of transportation, taxes, and miscellaneous handling costs, it develops that apples and pears can be produced and packed for an approximate f. o. b. cost per box of $1.09 and $1.16, respectively. Movement and handling to Buenos Aires adds an additional $0.79 and $0.80. If stored 30 days in Buenos Aires before export, which would be about average or below, the cost aboard ship is about $1.88 for apples and $1.96 for pears. Ocean freight rates (listed in table 6) may be added to determine costs on a c.i.f. basis in world markets. These figures all represent simple cost totals at a break-even level and do not reflect any profits or margins.

Mendoza Province

The Province of Mendoza lies north of the Rio Negro and thus is warmer and better suited to store fruits and grapes. This section leads in the production of wine, plums, and prunes and in the canning of deciduous fruits, particularly peaches. Two major areas exist in the Province, one at San Rafael and the other in the vicinity of the City of Mendoza. These areas are irrigated by rivers carrying runoff water from the Andes Mountains. The region between rivers is desert, supporting only cactus and arid land scrub growth. Annual rainfall is about 5-6 inches.

TABLE 11.--Apples and pears: Average packing costs, Rio Negro Valley, 1958 season

Item	Apples		Pears	
	Pesos per packed box	*Dollars per packed box*	*Peso per packed box*	*Dollars per packed box*
Materials:				
Box, assembled	12.70	0.334	11.70	0.308
Labels and glue	.25	.007	.25	.007
Corrugated cardboard, paper liners, and wraps	5.212	.137	5.212	.137
Nails for lid	.08	.002	.08	.002
[illegible]	.37	.010	.37	.010
[illegible]	.296	.008	.282	.007
[illegible]	8.50	.224	8.50	.224
Local transportation:				
Truck, packing shed to rail car	.50	.013	.50	.013
Transfer from truck to car	.20	.005	.20	.005
Taxes: Fruit export tax	[illegible]	[illegible]	[illegible]	[illegible]
Total cost per box packed and loaded for rail shipment from Rio Negro	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] of box cost and 3 percent of other material costs.

San Rafael is about 450 air miles due north of the Rio Negro Valley and the City of Mendoza is about 200 miles further north. Thus, both of these areas have warmer climates. Apples and pears of good quality are grown around San Rafael and packed for export but this area is not as well adapted climatically to these fruits as is the Rio Negro. Because of the warmer climate, varieties tend to be somewhat atypical in shape and do not color as well as the same variety grown in the Rio Negro. Red Delicious, for example, tends to be less elongated and very similar to this variety when grown in the Appalachian area of the United States, while the same apple grown in the Rio Negro is practically identical to those produced in our Pacific Northwest.

TABLE 12.--Rio Negro Valley: Total rail shipments, by kinds, 1954-56[1]

Season	Apples	Pears	Peaches	Plums
	Tons	*Tons*	*Tons*	*Tons*
1954	240,754	50,498	2,417	528
1955	169,528	47,250	2,219	556
1956	296,384	63,656	253	436

[1] Year beginning January 1.

The same good fertilization and spraying practices are used in the fruit areas of Mendoza Province as in the Rio Negro Valley. Materials used are the same and rates of application are very similar.

Fruit producing areas in Mendoza Province are rather widely separated and situated on the rivers. Other crops than fruit are produced in Mendoza. However, in the sections where fruit is grown, farmers are commercial fruit growers and do not generally engage in other agricultural activities.

In the area of Mendoza City the most important fruit industry is, by far, the production of grapes for wine. Other deciduous fruits are grown and shipped but are of much less importance. San Rafael, on the other hand, while producing grapes, has greater diversification of crops and grows apples, pears, and stone fruits. Apples and pears are packed fresh for export and domestic markets, peaches are grown chiefly for canning, and plums are shipped both fresh and dried. San Rafael is the most important area in the processing of Argentine deciduous fruits.

Mendoza Province is not subject to the high winds prevalent in the Rio Negro; therefore the poplar windbreaks are not used to the same extent, and plantations are generally much larger (averaging 100-150 acres) and much more diversified. One plantation visited had a total area of about 90 acres, and good-sized plantings of apples, pears, plums, peaches, and grapes were observed. Orchard roads were bordered with olive trees.

The entire Province is considered by many to be a marginal fruit area. Because of its somewhat higher altitude and nearness to the Andes, Mendoza is much more subject to frost and hail in the early spring than is Rio Negro. One or the other of these factors causes varying degrees of damage almost every year. Despite this situation, stone fruit production continues to increase and canning, particularly of peaches, is also expanding.

Irrigation.--The water supply for irrigation in Mendoza is somewhat of a problem, in that no surplus normally exists. Irrigation water is about adequate for the present acreage but could not supply any extensive expansion. The river supplying the San Rafael area, fed by melting snow and other mountain run off, carries a great deal of silt and has deposited this material along its course, so that the river is higher than the surrounding land.

TABLE 13.--Apples and pears: Costs of handling and transport Rio Negro Valley to Buenos Aires, 1958 season

Item	Apples		Pears	
	Pesos per packed box	*Dollars per packed box*	*Pesos per packed box*	*Dollars per packed box*
Freight--Railroad Rio Negro to Buenos Aires	6.72	0.177	6.72	0.177
Disinfection of car	.044	.001	.044	.001
Transfer car to truck, Buenos Aires	.25	.007	.25	.007
Transport to cold storage	.90	.024	.90	.024
Transport cold storage to dock	.90	.024	.90	.024
Loading, seal and countermark	.95	.025	.95	.025
Cold storage[1]	7.10	.187	7.10	.187
Taxes[2]	5.46	.144	5.95	.157
Miscellaneous costs[3]	5.00	.132	5.00	.132
Dispatch customs	2.50	.066	2.50	.066
Total cost, rail movement Rio Negro-Buenos Aires, handling and loading ship	28.724	.79	29.214	.80

[1] 30 days in cold storage.
[2] 5 percent and 2.8 percent of price of first sale--estimated at 70 pesos for apples and 75 pesos for pears.
[3] Amortization, administration in Buenos Aires, etc.

Irrigation canals are led off on both sides of the river in a herringbone pattern. The entire system is gravity fed. Some years, water is somewhat short, but to date it has not been so short as to affect production levels materially. Occasionally, spring floods are a problem when winter snow accumulation has been exceptionally heavy in the mountains or sudden, sharp spring thaws occur.

TABLE 14.--Apples and pears: Summary of costs Rio Negro Valley, 1958 season

Item	Apples	Pears
	U. S. dollars per packed box	*U. S. dollars per packed box*
Production costs	0.34	0.44
Packing costs	.75	.72
Total cost f.o.b. Rio Negro	1.09	1.16
Freight and handling charges to port	.79	.80
Total cost loaded ship Buenos Aires	1.88	1.96

Cultural and packing costs.--Production and packing practices and methods for fresh apples and pears in Mendoza Province are generally identical to those in the Rio Negro Valley.

Because of the larger holdings in Mendoza and the diversified plantings of fruit, it was not possible to develop detailed cultural costs as was done for the Rio Negro Valley. However, packing costs were worked out for the San Rafael area and, using the actual average prices paid growers as the fruit costs, the data in table 16 were developed.

Fruit canning.--From the data on the utilization of fruit grown in Mendoza Province, it is obvious that processing is an important industry in the area, taking 35 percent of the total fruit.

Several types of fruit are canned, with peaches being by far the most important. In addition, some pears are canned but this product has been held to a very low volume because of the lack of peeling machinery. Hand peeling yields a relatively high-cost product with a limited outlet. Some trial lots of plums have also been packed. With no appreciable interest developed in consuming channels, no potential volume is seen for plums in the near future.

Canners are looking to European markets for their largest future increases in sales. Argentine canned peaches have generally received good acceptance in European markets in recent years.

The major problem confronting Argentine canners in their attempts to build an export market is the lack of a stable domestic market, and a great deal of consumer education is necessary to build such an outlet. The Argentine public is not normally in the habit of using canned fruit except peaches, which are distributed and sold throughout the country. Even in the case of peaches, much room for expansion still exists. Canners are somewhat reluctant to expand production too rapidly for possible export outlets when there is no domestic market to take the goods if exports are not realized.

However, Argentine trade figures show that canned fruit exports have increased sharply in recent years (table 19). A breakdown by commodity is not available; these items constitute a single category in Argentine customs schedules. However, it may be assumed that the heavy preponderance is peaches.

Canners generally buy peaches from growers on an orchard run basis. Only one plant attempts to buy on a quality basis. Fruit is lye peeled and graded for packing. Sound unblemished peaches are packed as halves, spotted fruit is hand trimmed and sliced, and that which would require a high degree of trimming goes into jam and preserves.

The No. 2-1/2 can is the most common size used for fruit. The No. 2 can is also used, as are some other minor sizes.

Throughout the area, the halves pack, known as "al natural," is uniformly good--the finished product comes from the best unblemished fruit.

TABLE 15.--San Rafael area, Mendoza Province: Estimated acreage and production of fruit, 1952-56

Type	Acreage					Production[1]				
	1952	1953	1954	1955	1956	1952	1953	1954	1955	1956
	Acres	*Acres*	*Acres*	*Acres*	*Acres*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*
Apples	5,683	5,807	5,880	5,930	6,005	661	305	965	808	1,116
Pears	4,940	5,000	5,115	5,190	5,240	965	799	1,392	1,088	1,461
Peaches	13,590	14,700	15,815	17,050	17,915	1,436	590	1,056	1,506	450
						Tons	*Tons*	*Tons*	*Tons*	*Tons*
Plums	9,884	11,675	11,980	12,725	13,340	34,722	12,566	28,660	42,163	68,618
Apricots	1,500	1,550	1,580	1,660	1,730	5,060	2,420	1,213	3,100	([2])
Grapes	59,300	61,775	63,010	64,740	66,720	211,640	219,910	291,010	258,600	145,500

[1] Year beginning January 1.
[2] Not available.

Ministerio de Agricultura y Ganaderia, Agronomia Regional, San Rafael, MZA.

TABLE 16.--San Rafael area, Mendoza Province: Average costs of packing fresh fruit for export, 1957 season

Item	Apples				Pears		Peaches		Plums	
	Red Delicious		Other varieties							
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cost of fruit[5]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Packing materials	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Incidental costs (fuel, helpers, travel, etc.)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Labor, social security, and other contributions	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Transport to cold storage, loading and unloading, etc.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cost f.o.b.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Freight to Buenos Aires	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cost laid Buenos Aires[6]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[1] Per packed box of approximately 48.5 lbs.
[2] Per packed box of approximately 44 lbs.
[3] Per packed lug of 33 lbs., domestic pack.
[4] Per packed lug of 22 lbs.
[5] Cost of fruit is amount paid by packers to growers during season.
[6] Does not include charges in Buenos Aires: Cold storage, loading and handling, commissions, etc.

However, sliced peaches vary greatly in the quality of pack. At least one canner grades this pack very closely, and all fruit which is the least bit questionable is discarded. On the other hand, packing was observed where any peach sufficiently whole after trimming to be sliced was canned, with no consideration given to degree of ripeness or other factors affecting the firmness of the finished product.

TABLE 17.--Mendoza Province: Fruit utilization, by kinds, 1956 season

Species	Shipped fresh	Processed	Consumed locally	Total
	1,000 tons	*1,000 tons*	*1,000 tons*	*1,000 tons*
Apples	30.7	9.6	4.0	44.3
Apricots	7.2	3.7	1.0	11.9
Cherries	2.9	.5	.5	3.9
Peaches	21.7	32.7	5.0	59.4
Pears	19.0	2.3	2.0	23.3
Plums	4.7	8.2	1.5	14.4
Other	[illegible]	[illegible]	[illegible]	[illegible]
Total	99.7	62.7	17.3	179.[illegible]
	Percent	*Percent*	*Percent*	*Percent*
Share of total	[illegible]	[illegible]	9.6	100.0

Packing in the area varies from plant to plant so that all degrees of quality between these extremes exist.

The "al natural" pack, however, is the one which has been exported and is expected to develop increased foreign sales in the future.

For fruit sold domestically, canners are required by law to stamp the can label with the price at which the fruit was sold to the retailer so that the consumer can check on the retailer's mark-up.

TABLE 18.--Canned fruit: Production 1952-56

Year	Peaches	Other	Total
	1,000 cases[1]	*1,000 cases*[1]	*1,000 cases*[1]
1952	792	125	917
1953	833	83	916
1954	292	125	417
1955[2]	667	125	792
1956	833	42	875

[1] Equivalent 24 No. 2-1/2 cans.
[2] Processing restricted by can shortage.

Raw fruit costs vary considerably from year to year depending on the size and average quality of the crop. This size and quality depends, in turn, to a large extent, upon the incidence of spring frosts and hail storms. Consequently, f. o. b. costs fluctuate widely between years of varying production.

Fruit drying.--Dried fruit packed in San Rafael is chiefly prunes, with smaller quantities of peaches and pears. The heavy preponderance of prunes packed is of the D'Agen variety, dried whole; the balance is pitted Presidents. Peaches are dried both whole and in halves, with the halved form making up most of the volume. Pears are sliced.

TABLE 19.--Fruit, Canned: Exports by country of destination, 1955-57

Country of destination	1955	1956	1957
	1,000 cases[1]	*1,000 cases*[1]	*1,000 cases*[1]
Belgium..............	--	14.2	0.9
Brazil...............	34.7	26.6	8.6
Finland..............	15.0	--	--
Germany, West.........	--	42.4	132.8
Netherlands...........	--	9.7	8.7
Norway................	--	6.8	.1
Peru..................	.1	1.2	1.0
Sweden................	5.0	176.9	6.3
United Kingdom........	--	--	108.0
Other.................	--	10.1	12.7
Total............	54.8	287.9	279.1

[1] Cases of 24 No. 2-1/2 cans.

Some dried fruit is exported but as yet this trade has not reached any sizable proportion and most of the product is consumed domestically. Production has increased somewhat over the years but apparently just enough to meet domestic requirements and no concerted effort to increase exports has developed. Most attempts along this line, to date, have been concentrated in Brazil and other neighboring countries.

San Juan

The second largest grape producing area in Argentina is in San Juan Province, centered around the City of San Juan. While grapes for wine is an important product of the area, a large part of the production is shipped fresh for table use or dried into raisins.

San Juan has an average annual grape production of about 550,000 short tons on nearly 100,000 acres. Of this amount, 495,000 tons from 62,000 acres are used for wine and about 55,000 tons from about 37,000 acres for table grapes and raisins. The limit of the zone used for grape growing is fairly well established by the effective limits of the irrigation system. There is little potential for expansion of this area.

The packing of fresh grapes and drying of raisins is largely a one-plant operation in San Juan: the plant of Argentine Fruit Distributors handles 90 percent of the grapes grown for these purposes. This plant buys the grapes from the grower and performs all subsequent operations up to and including shipping. The plant proper includes offices, packing sheds, cold storage warehouse and ice plant, bleaching rooms, and drying yards.

The ice plant produces sufficient ice to refrigerate all railroad cars used for fresh table grapes, and the cold storage warehouse has space to meet all precooling requirements plus some storage space. Refrigerator cars are available to meet needs, although occasionally it is necessary to hold grapes a day or two while waiting for a car to arrive. Refrigerator cars are reserved for grapes during the shipping season.

Chief varieties grown for export fresh are Almeria, Santa Paula, Ribier, and Datil de Behrut. "Muscatel" and some local varieties are packed for domestic markets.

Most packing of fresh grapes in the San Juan area is done in the vineyard rather than in the packing shed. This is done to eliminate transporting them loose in field boxes and damaging them. Pickers are organized in groups of four or five, and move through the vineyard with a portable sorting table. One man in each crew packs while the rest pick and clean the bunches, each picker cleaning his own. When packed, the lug is hand carried to a central point where it is lidded. The packed lugs are then stacked on a flat stretcher like carrier and moved by two men to the edge of the vineyard where they are loaded on trucks for transport to the cooling plant. Packages used are standard 28-lb. lugs.

Varieties of grapes dried into raisins are Sultaninas, similar to Thompson seedless, and a red, seeded variety known as Muscatel. Sultaninas are packed in three types according to color--Rubia (Blond), Triguena (Chestnut), and Negra (Dark), the latter natural and the first two bleached. Muscatels are packed in cluster, unbleached, and separated according to size into 5 grades, 0, 00, 1, 2, and 3, with the high number indicating smaller size.

Grapes are dried on racks in the sun or during peak harvest season on paper strips laid on the ground. This latter method is used only when the volume of grapes exceeds the capacity of the drying racks. During the drying season, the temperature averages 90° F., with frequent highs of 105°. Rain is virtually unknown during this season of the year. Birds are scarce in the area and present no problems during the drying period.

Raisins are bleached with sulfur dioxide in separate concrete rooms in the center of the drying yard, after the grapes have been dried. Sorting by size is done on shaker screen machines, but separation by color is a hand operation, performed whenever workers are not busy in the drying yard or at other tasks in the packinghouse.

TABLE 20.--Peach halves: Calculated cost of canning per case (24/2-1/2s), San Rafael area, Mendoza Province, 1957 and 1958

Item	1957[1]		1958[2]	
	Pesos per case[3]	*Dollars per case*[3]	*Pesos per case*[3]	*Dollars per case*[3]
Raw fruit	129.936	3.42	62.699	1.65
Manufacturing supplies:				
Sugar	12.332	.32	12.015	.32
[illegible]	5.274	.01	.665	.02
Material supplies:				
Cans or glass	[illegible]	.67	26.526	.70
Box or carton	[illegible]	.13	6.447	.17
[illegible]	[illegible]	.06	2.467	.06
Labor	[illegible]	.38	21.310	.56
Supervision and miscellaneous costs	[illegible]	.09	2.599	.07
Cost before overhead	193.116	5.08	134.708	3.55
Overhead (advertising, etc.)	70.925	1.87	30.043	.79
Total cost	264.041	6.95	164.751	4.34

[1] Season of low production.
[2] Season of high production.
[3] Case of 24 No. 2-1/2 cans.

Parana Delta

The Delta is the earliest fruit section in Argentina. Fruit is not of high quality. Spraying and fertilization are just beginning, and mostly trial and error methods are being used. For example, in one orchard trees were noted with a high percentage of chlorotic leaves where 2-4-D had been sprayed on in an attempt to induce faster growth and quicker ripening of fruit.

Some of the best growers are using malathion sprays and complete fertilizers but application is sporadic, with no regular schedule of application. Growers said that they broadcast fertilizer around each tree at a rate dependent on the applicator's idea of what the individual tree needs.

Fruit from orchards where sprayers are used comes to market with a heavy coating of spray residue. In the best packs this is wiped off but in others it is ignored.

TABLE 21.--Dried fruit: Fresh fruit for drying, value, and dried fruit production San Rafael area, Mendoza Province, 1957 season

Kind and variety	Fresh fruit dried				Production dried	Amount fresh to yield 1 pound dried
	Quantity	Value				
		Total		Per pound		
	Pounds	*Pesos*	*Dollars*	*Dollars*	*Pounds*	*Pounds*
Prunes:						
D'Agen	2,577,000	2,007,000	52,800	0.020	948,100	2.7
President	113,000	111,000	2,900	.026	33,100	3.4
Peaches:						
Cling, whole, pitted	69,100	47,000	1,225	.018	7,100	9.7
Cling, whole, unpitted	20,900	14,000	370	.018	4,200	5.0
Freestone, halves	8,200	5,500	145	.018	1,700	4.8

Most of the fruit is unclassified and sold that way. It shows scars, bruises, insect marks, and the like to varying degrees and is in varying stages of soundness. This fruit being first on the market each year sells at relatively high prices and almost always meets a very good demand. However, when graded, packed fruit from Rio Negro and Mendoza arrives on the market, it is no longer possible to sell Delta fruit. A large portion of Delta apples goes into cider.

Most of the growers are relatively wealthy men and have always made a good profit on fruit. Each grower owns his own launch to transport his fruit to market. The big growers own their own packinghouses, cold storage plants, and in some cases processing plants. Their homes are equipped with modern refrigerators operating on kerosene and those that want them own tractors and some other machinery. Thus, the few people doing extension work in the area find it extremely difficult to convince these growers that there is anything wrong with the way they have been operating.

Fruit moving from the Delta is transported by boat to the Tigre market, northwest of Buenos Aires. There the grower ties up to the quayside and then can sell his fruit in any of three ways: to merchants who maintain operations in rented stores in the center of the quay, to buyers from Buenos Aires firms who come to the quayside market, or to the local populace who also patronize the market. The latter usually come in large numbers on week ends and holidays, and even on weekdays much fruit is moved to this local outlet.

The merchants who maintain establishments on the quay buy from the growers' launches, repack fruit from growers' baskets, return the baskets to the grower, and ship to Buenos Aires and other markets in Argentina. Costs do not seem to be an important consideration to these people. When asked what they estimate the cost of transportation of the fruit to market might be they usually say, "We own our own trucks (or launch as the case may be) and thus cost is not important." Possibly this is the simplest and best approach, as the cost for those few who use commercial freighters from Tigre to Buenos Aires is only about 1-2 pesos (2.6 to 5.2 cents) per box.

Fruit moving from Tigre to Buenos Aires travels about 45 miles, all by truck. In Buenos

TABLE 22.--Dried fruit: Calculated cost of processing and packing, San Rafael area, Mendoza Province, 1957 season

Item	Prunes				Peaches						Pears	
					Clings							
	D'Agen		President (pitted)		Whole, pitted		Whole, unpitted		Freestone, halves			
	Pesos per lb. of dried	*Dol. per lb. of dried*	*Pesos per lb. of dried*	*Dol. per lb. of dried*	*Pesos per lb. of dried*	*Dol. per lb. of dried*	*Pesos per lb. of dried*	*Dol. per lb. of dried*	*Pesos per lb. of dried*	*Dol. per lb. of dried*	*Pesos per lb. of dried*	*Dol. per lb. of dried*
Processing:												
Cost of fruit	2.12	---	3.79	---	6.80	---	3.40	---	3.36	---	0.39	---
Fixed costs	1.11	---	1.11	---	1.11	---	1.11	---	1.18	---	1.11	---
Materials	.07	---	.07	---	.14	---	.09	---	.09	---	.14	---
Labor	.32	---	.29	---	1.34	---	.45	---	.45	---	1.00	---
Pitting	---	---	.68	---	([1])	---	---	---	---	---	---	---
Total	3.62	0.10	5.94	0.156	9.39	0.247	5.05	0.133	5.08	0.134	2.64	0.070
Classification and grading:												
Materials	[illegible]	---	[illegible]	---	[illegible]	---	[illegible]	---	[illegible]	---	.05	---
Labor	.34	---	.31	---	[illegible]	---	[illegible]	---	.23	---	.45	---
Total	[illegible]	[illegible]	[illegible]	[illegible]	.82	[illegible]	.32	.008	.28	.007	.50	.013
Packing:												
Materials	[illegible]	---	[illegible]	---	[illegible]	---	[illegible]	---	.23	---	.23	---
Labor	[illegible]	---	[illegible]	---	[illegible]	---	[illegible]	---	.68	---	1.41	---
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.73	.019	.91	.024	1.64	.043
Total cost f.o.b. plant	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.10	[illegible]	[illegible]	[illegible]	4.78	.126
Freight to Buenos Aires	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.12	[illegible]	.12	.003
Cost laid Buenos Aires	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.22	.163	[illegible]	.168	4.90	.129

[1] Cost of pitting included in labor.

Aires it may go to any of the local markets or be loaded on trains for transport to other parts of Argentina. Some, packed especially for this purpose and about equivalent to a good canning grade, may go to cold storage. In storage it is held until the Rio Negro and Mendoza fruit is no longer plentiful and Tigre fruit again can find a market.

Red Delicious and Jonathan are prominent in the Delta but the major variety of apples is Dirty Face, reported to be an excellent cooking apple, high in iron content. It gets this name from the fact that it always has heavy russeting around the stem and extending down over one cheek. Williams pears are grown in the Delta but not in as large a volume as apples. Plums are the most popular fruit as measured by numbers of trees. Peaches and other stone fruits also are grown. The known varieties such as Delicious and Williams are extremely variable and retain very little of the characteristic appearance associated with the variety. Most apples grown in the Delta also are very poor in color.

Delta fruit will never enter the export market, so its major economic importance is in supplying the domestic market. However, this area is on the wane; fruit acreage is decreasing annually, as many growers on islands close to Tigre have sold their farms to others who are developing tourist and vacation resorts. This trend seems to be spreading.

One grower in the Delta states that he has 22 hectares of orchards (54 acres) and from this he grosses about 400,000 pesos per year ($10,800), of which 300,000 pesos (over $8,000) is profit. These figures must be taken in the light of the grower's lack of cost consciousness

TABLE 23.--Grapes: Calculated cost of packing for export, San Juan, 1952 and 1957

Item	1952		1957	
	Pesos per lug[1]	*Dollars per lug*[1]	*Pesos per lug*[1]	*Dollars per lug*[1]
Fresh grapes:				
Per pound	0.59	---	1.59	---
Per lug	16.90	0.44	46.00	1.21
Lug	4.00	.11	4.50	.12
Paper	.80	.02	1.10	.03
Nails	.50	.01	.75	.02
Label	.20	.005	.39	.01
Labor (picking, packing, etc.)	6.00	.16	6.50	.17
Loading and handling	1.00	.03	2.00	.05
Cold storage	1.50	.04	3.90	.10
Administrative costs	4.00	.11	2.50	.07
Excelsior and crepe paper	.60	.02	.95	.025
Export tax seals	.10	.002	.10	.002
Total cost f.o.b. San Juan	[illegible]	.95	68.69	1.81
Freight to Buenos Aires	[illegible]	.08	6.00	.16
Cost laid Buenos Aires	[illegible]	1.03	74.69	1.97

[1] 28-pound lug.

Raisins are dried on racks and on the ground, San Juan.

and it must be assumed that his actual profit is somewhat less than shown depending on how many cost factors he has overlooked. However, it is readily apparent that this farmer is exceptionally well off by Argentine standards, although he lives very simply and close to the land. There is little absentee landholding in the Delta, except for the few owners of very large estancias.

The average size of farm in the Delta is about 10 hectares; the largest are 100-200 hectares.

DOMESTIC MARKETING

The major market in Argentina is, of course, Buenos Aires and its suburbs, with a metropolitan population of approximately 8 million. Fruit moves to Buenos Aires for sale there and for transshipment by rail to northern areas of the country. Containers used for domestic markets are extremely variable, with fruit packed in burlap bags and various types of crates and boxes.

In Buenos Aires, fruit is received in several general wholesale markets. The largest of these markets is operated by the government and all others are private.

Operation of Buenos Aires Market

The major fruit market in Buenos Aires is the Mercado Nacional de Frutas, which handles 12 percent of all the fruit consumed in the Federal Capital area.

This market is administered by the Ministry of Commerce and Industry, and is the only government-operated market in the city. The operation is modeled after similar markets in the United States and is very similar to rail terminal markets here.

Rail cars and trucks deliver produce to the market, which occupies a large shedlike building about 165 feet x 1,200 feet. Each seller has an assigned area, or floor space, where he stacks the produce offered for sale. Buyers come to look at samples and make purchases. All transactions are strictly cash. The buyer makes his choice of produce and receives a sales ticket from the seller stating the description of the merchandise, number of packages, and the price of each unit. This slip is presented to one of the several cashiers stationed in cages around the floor, and payment for the merchandise is made. The buyer receives a receipt and then is authorized to remove the merchandise whenever he wishes.

The market receives the money and after deducting charges for "derecho de piso" (the right of floor) and bookkeeping charges, remits the balance to the seller. These charges for floor space are about 25 centavos per box (100 centavos = 1 peso). The total charges for the market facilities are close to, but never exceed, one peso (2.6¢) per box.

Additional services provided by the market include a daily bulletin sent to all who request it and pay the postage. The bulletin shows by shipping area, kind, and variety the number of boxes carried over on the market from the previous day, the number arrived, the sales, and the carryover to the next day. It also shows average prices by grade received during the day.

The law requires all private markets to report similar information daily to the manager of the Mercado Nacional. These data are combined and a daily bulletin issued, showing the same general information for the entire Federal District. Compilations are made and monthly and annual summaries issued. Paper, however, is expensive in Argentina and only limited copies of the summaries are distributed.

Fruit for domestic use in Argentina is of three types: orchard run fruit in lidded boxes of various sizes averaging about 65 pounds, fruit not suitable for export but graded and packed in standard boxes, and fruit originally packed for export but turned down by inspection officials at the port because of decay or other condition factors in excess of tolerance.

Since export fruit generally moves to cold storage in Buenos Aires to await export and domestic fruit moves directly to market, this last category is in most cases the only fruit on the domestic market which has been refrigerated at all.

TABLE 24.--Raisins: Calculated cost of packing and processing, San Juan, 1952 and 1957

	1952				1957			
	Sultanina		Muscatel		Sultanina		Muscatel	
	Pesos per lug[1]	*Dollars per lug*[1]	*Pesos per lug*[1]	*Dollars per lug*[1]	*Pesos per lug*[1]	*Dollars per lug*[1]	*Pesos per lug*[1]	*Dollars per lug*[1]
Fresh grapes (88 lbs.)	72.00	1.89	42.00	1.11	120.00	3.16	120.00	3.16
Drying and cleaning	9.50	.25	6.20	.16	10.50	.28	7.20	.19
Box	4.30	.11	4.30	.11	5.10	.13	5.00	.13
Assembling box	.50	.01	.50	.01	.70	.02	.70	.02
Nails, paper, packing material, and lidding box	1.40	.04	1.40	.04	2.50	.06	2.00	.05
Export seals	.10	.003	.10	.003	.10	.003	.10	.003
Administration charges	3.00	.08	3.00	.08	4.00	.11	4.00	.11
Cost f.o.b. San Juan	90.80	2.39	57.50	1.51	142.90	3.76	139.00	3.66
Freight to Buenos Aires	2.35	.06	2.35	.06	3.80	.10	3.80	.10
Cost laid Buenos Aires	93.15	2.45	59.85	1.57	146.70	3.86	142.80	3.76

[1] 22 pounds of raisins, net weight.

Recently there has been a trend toward storage of fruit destined for the domestic market and this practice will likely continue. It is particularly prevalent among the larger growers in areas such as the Delta who wish to hold fruit for sale when higher-quality producing areas are not on the market.

EXPORT OUTLOOK

Fresh Fruit

Argentine exports of apples and pears are growing substantially and will continue to do so. In addition, Argentina is finding means to extend shipments over a longer period. If this trend continues United States fruit will be facing increasing competition from Argentine fruit during the early months of the United States season in addition to that now encountered in the late months.

This competition is not likely to be of any great concern on United States home markets, as storage fruit from the Southern Hemisphere cannot hope to compete successfully with home-grown supplies during and immediately following the United States harvest season. However, United States exporters will likely find this development causing them increasing concern in world markets, particularly in Scandinavia and elsewhere in northern Europe.

For example, Argentine exports of apples to West Germany increased from 0 in 1955 to 59,000 boxes in 1957; to Sweden from 110,000 to 650,000 during the same period; and to Norway from 0 to 184,000 boxes.

On the other hand, the tremendous increase in supplies available in the early part of the Argentine shipping season could tend to increase exports at that time to United States markets. Such shipments would compete directly with United States storage apples during the spring movement. The volume, however, of Argentine shipments to the United States will depend largely on the price level existing in the United States. This price level, in turn, is generally a reflection of the domestic supply situation and thus could be expected to work as a deterrent to Argentina in years when United States domestic supplies are heavy.

This short-term outlook is particularly applicable to apples. In the long run, if present relatively profitable conditions for pears continue, much the same type of pattern could develop in this commodity.

There is nothing in the picture now to indicate any sudden curtailment or reversal of this trend. Pears will continue expansion at very moderate rates for at least the next few years. The long-term outlook of course depends on the continuation of the profitable price levels and on how rapidly the resultant increase in the rate of planting of new trees develops.

Processed Fruit

Exports of canned peaches can also be expected to increase in coming years. Argentina already has the fresh production and plant capacity to increase packing to meet widening markets in Europe. If restrictions on the importation of machinery are eased to allow adequate tooling of plants and replacement of worn machinery, additional production increases would be possible. Also, additional products, such as pears, would probably be packed.

Dried fruit exports will likely continue to be relatively small in coming years. No concerted efforts toward market expansion have developed.